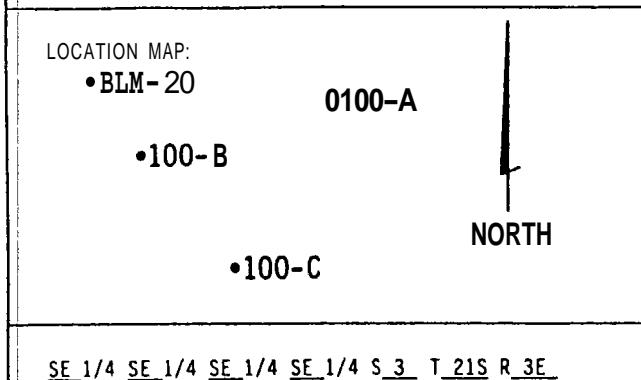


LITHOLOGIC LOG

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SITE ID: NASA-WSTF LOCATION ID: 100-B-*
SITE COORDINATES (ft.):
N 223036.40 E 413337.51
GROUND ELEVATION (ft. MSL): 4756.79 (B.C.)
STATE: NEW MEXICO COUNTY: DOÑA ANA
DRILLING METHOD: Mud/Air Foam Rotary
DRILLING CDNTR.: Larjon Drilling Company
DATE STARTED: 06/07/89 DATE COMPLETED: 7/12/89 (P&A'd)
FIELD REP.: P.S. Esan / J.F. Kirby
COMMENTS: 16" borehole to 70.5'. 10" surface casing set to
70.5'. 9 7/8" borehole. 70.5'-401' (T.D.). Bedrock encountered

LOCATION DESCRIPTION: at approx. 210'. T.D. at 401'. Casing 1 led during grouting; well plugged and abandoned.

Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description	
5	+++:::vv//		0'-72' Timed by driller every 20'	Cuttings 0'-401	0'-210'	Alluvium Santa Fe Group): Dark grey (N3) to yellowish orange (10 YR 6/6) cuttings, moderate yellowish brown (10 YR 5/4) clay: cuttings range in size from less than 0.1 inch to 0.5 inches, are angular to subrounded and poorly sorted. Natural grains are clay, silt, and fine, subrounded sand. This lithologic unit is an unconsolidated to consolidated polygenetic pebble to boulder conglomerate. Lithology of cuttings are: light gray (N7) to grayish black (N2) micritic limestone, white (N9) rhyolite exhibiting rims of iron stains around mafic phenocrysts (sometimes oxidation has pervaded entire cutting coloring it pink to dark red), dusky red (5 R 3/4) to grayish olive (10 Y 4/2) siltstone, white (N9) to light olive gray (5 Y 6/1) to grayish orange (10 YR 7/4) quartzite and chert, dark grey (N3) to very dusky red (10 R 2/2) aphanitic, microporphyritic, and porphyritic andesite: and lesser amounts of reddish granite, yellowish brown sandstone, and caliche as both cuttings and coating on other cuttings. Comments: The upper 20' of this section is bouldery and contains some caliche hard-pan layers and caliche-cemented alluvium. Thin clay lenses (layers) are present but decrease in frequency with depth. Decreased penetration rates with depth are interpreted as increased induration of alluvium in the deeper section. The percentage of very dusky red (10 R 2/2) andesite in cuttings also increases with depth until andesite bedrock is encountered at 210'.
10	+++ooooov:		45 (0-12')			
15	+++:v:::o:v//					
20	+++:++vVV::o					
25	====+=+++=+V					
30	+++:++EVv:://		64 (12'-32')			
35	+++:++v::=//					
40	+++:++v::=					
45	+++:++v::=		38 (32'-47')		0'-20'	Very bouldery. Signs of caliche in cuttings. Very slow drilling. Cuttings are small and fairly uniform (0.2 inches) average diameter.
50	=====+=				20'-25'	Clayey alluvium.
					25'-45'	Increase average cutting size to 0.4 inches.

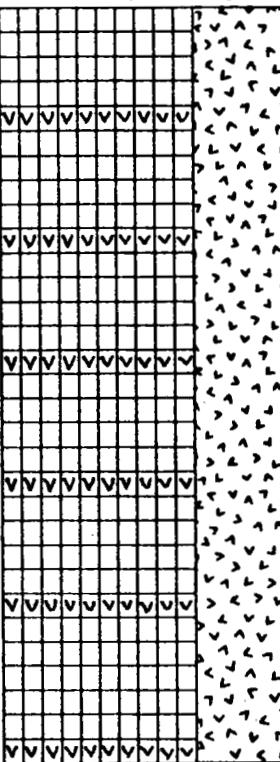
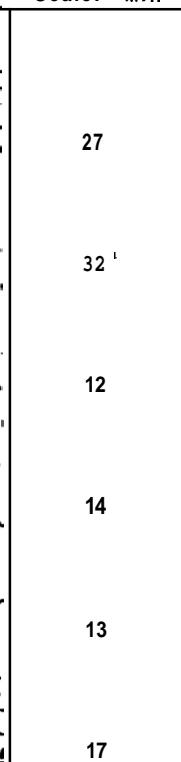
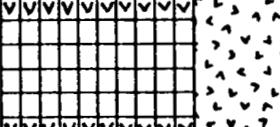
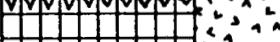
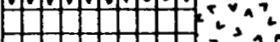
Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
50				Cuttings (cont'd)	
55					
60			70 (47'-62')		
65					
70			47 (62'-72') Start Drillograph		70'-75' Most of the sample contains cuttings of grout.
75			6		
80			7		
85			5		
90			11		
95			6		95'-105' Increase in average cutting size to 0.3 inches.
100			5		
105			4		
110			6		
115			6		

Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
				Cuttings (cont'd)	
115	+H+H+VWV:		6		
120	+H+H+VWV: //		10		
125	+H+H+VWV: //		5		
130	+H+H+VWV: //		8		
135	+H+H+VWV: //		8.		
140	+H+H+VWV: //		8		140'-145' Lost circulation.
145	+H+H+VWV: //		27		140' 150' Increase in average cutting size to 0.4 inches.
150	+H+H+VWV: //		4		150'-190' Decrease in average cutting size to approximately 0.1 inches.
155	+H+H+VWV: //		5		
160	+H+H+VWV: //	M			
165	+H+H+VWV: //	6			
170	+H+H+VWV: //	6			
175	+H+H+VWV: //	30			
180	+H+H+VWV: //	55			

Depth	Visual %	Lith	Drilling Time Seale: min	Sample Type and Interval	Lithologic Description
180			55		
185			35		
190			25		
195			18		
200	VVVVVVVVt++/		42	195'-210'	Increase in volcanics in cuttings. Most of volcanic fraction is very dusky red (10 R 2/2) andesite. indicates a lithology transition from alluvium to andesite.
205	VVVVVVVVt++/		9		
210	VVVVVV+++/		17	210	Foam changed color from brown to dark purple.
215	VVVVVVVVVVVVV		42	210'-401'	Andesite (Orejon): Very dusky red (10 R 2/2), wet; cuttings range in size from less than 0.1 inches to 0.2 inches, are angular and flaky to subrounded. This rock unit is an aphanitic to microporphyritic andesite. White calcite plagioclase (?) and green epidote are present as individual cuttings. Reddish brown iron oxide staining is present. <u>Comments:</u> The andesite is hard and penetration rates are slow. Small fractures are present according to bit behavior.
220	VVVVVVVVVVVVV		29		
225	VVVVVVVVVVVVV		30	210'-240'	Cuttings are uniform flaky chips averaging 0.1 inch in size.
230	VVVVVVVVVVVVV		62		
235	VVVVVVVVVVVVV		50		
240	VVVVVVVVVVVVV		39	240'-245'	Cuttings are very fine, less than 0.1 inch, like fine sand.
245	VVVVVVVVVVVVV		31		

Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
245	VVVVVVVVVVVVVV		31	Cuttings (cont'd)	245'-265' Increase in cutting size to 0.1 inches.
250	VVVVVVVVVVVVVV		31		
255	VVVVVVVVVVVVVV		36		
260	VVVVVVVVVVVVVV		36		
265	VVVVVVVVVVVVVV		37		265'-275' Decrease in cutting size to less than 0.1 inch. Samples are like fine sand.
270	VVVVVVVVVVVVVV		29		270'-275' Small amounts of green epidote in samples.
275	VVVVVVVVVVVVVV		29		275'-296' Andesite cuttings are exhibiting more phenocrysts with depth from 275 -296'. Also more green epidote and grayish andesite is present with depth in this interval.
280	VVVVVVVVVVVVVV		27		
285	VVVVVVVVVVVVVV		27		
290	VVVVVVVVVVVVVV		28		
295	VVVVVVVVVVVVVV		30		296'-401' Cuttings are very fine (less than 0.1 inches) indicating a hard formation.
300	VVVVVVVVVVVVVV		36		
305	VVVVVVVVVVVVVV		35		
310	VVVVVVVVVVVVVV		43		

Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
				Cuttings (cont'd)	
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Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
375			27	Cuttings (cont'd)	
380			32		
385			12		385'-401' Significantly reduced drill times. Andesite cuttings contain pale green epidote.
390			14		
395			13		
400			17		401' Total Depth
405					
410					
415					
420					
425					
430					
435					
440					